WEB-BASED QUESTION BANK IN INDIAN HIGHER EDUCATION: AN OPEN EDUCATIONAL RESOURCE

By

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ABSTRACT

Question bank provides an opportunity to improve the evaluation, learning and answering skills among the students, questioning logics among the teachers, and examination patterns among curriculum designers. The question bank is not a learning material but supports as self-evaluation guide. In India, almost 259 State universities administer examinations for more than 22,000 colleges, but only few universities electronically archive the past examination questions (PQ) prepared for future use. Internet will be an effective ICT tool for accessing PQ from anywhere and anytime, and hence distributing question banks as web-based Open Educational Resource (OER) would help enormous student and teacher community in India. Further, the systematic Web-based Past Examination Question Bank (WPQB) with customized search facilities will provide a flexible access to question bank.

Keywords: Question Bank, Higher Education, Open Educational Resource (OER), Web-Based Past Examination Question Bank (WPQB).

INTRODUCTION

Not only is social life identical with communication, but all communication (and hence all genuine social life) is educative (Dewey, 1923). Education is empowered to make any social change and ICT has added its contribution during the past decade. The ICT's role in the education has made significant transformations in our society. Despite the efforts of teachers to adopt recent technologies, the ICT awareness among new generation learners has pulled its implementation in education. The intervention of ICT in education has given too many options for teaching, learning and educational administration. Failing to manage it appropriately will lead to a chaotic environment. At the same time, too many options are necessary to satiate the present requirements. The blend of systematic application of technology and appropriate educational knowledge always yields a professional teaching and mastery learning.

The implementation of ICT in education and challenges in higher education has changed the educational scenario in several aspects. The increasing use of portable devices and campus networks has gained the attention of many institutions. E learning, the teaching-learning process through electronic devices, has become integral and essential part of the studies and research in many developed nations. However, the impact of globalization and change in educational governance throughout the world has shrunk the boundaries of education with digital technologies to promote equity. The technologies that were mostly supporting the non-formal education system now have become part of formal system to converge the conveniences by bridging the gaps between those systems.

Web-Based Learning

Several studies have proved the effectiveness of computer-based and web-based instructions. The web-based instruction is becoming popular in higher education for its wide support of virtual learning. The extensive growth in internet highly promoted the web-based learning. The Virtual Learning Environment (VLE) having teaching, learning and evaluation features supports the students and teachers of both formal and non-formal systems. Consistently the gap between formal and non-formal education systems is slowly disappearing with developments in web technologies. Particularly Learning Management System (LMS) and Virtual Classroom (VC) are the mostly implemented VLEs on internet/intranet.

Open Educational Resources (OER)

In the midst of web revolution, availability of sophisticated tools to calibrate any kind of web applications has brought several achievements through web-based education such as virtual classroom, online distribution of learning materials, anytime-anywhere teaching/learning and online assessment. Simultaneously, web has been proved as the best destination to fulfill the UNESCO's concept of Open Educational Resources (OER).

Since 1998 when Tim O'Reilly conducted the Freeware Open Source Summit, the term open source has become very popular (Rossum, 1998). Open source refers to the source materials of end product. Open source software is the one supplied with the source code/program. The design and development of open source software provide the flexibility to use, reuse, modify and add users' interests without restrictions. The development of free digital contents and tools as resources in educational domain (formal, non-formal and informal educational settings) is the underlying idea behind OER.

OER are digitized materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research. OER includes learning content, tools and implementation resources.

Learning Content

Full courses, courseware, content modules, learning objects, collections and journals are the learning contents that are useful to students and teachers.

Tools

Tools are the software like learning management systems and content development systems that used to support development, use, reuse, search, organize and deliver the content.

Implementation resources

Design principles and intellectual property licenses are the implementation resources. Several institutions have already started offering OER services, and the major contributors are Massachusetts Institute of Technology, Rice University, Carnegie Mellon University and Utah State University (Organization for Economic Co-operation and Development, 2007). In 2009, the National Knowledge Commission of India recommended promoting OER to overcome issues such as lack of high quality teachers, inadequate infrastructure in the universities/colleges and more specifically their libraries, and the poor quality of educational resources utilized at various colleges and universities. Moreover, the committee has recommended creating question banks as the OER. The major suggestions made by the committee are as follows (National Knowledge Commission, 2009):

- To create distributed repositories of educational content.
- To increase the availability of educational applications through internet.
- To create open-standard and service-oriented facilities for distribution of educational content.

Question Bank

Question bank is a large, systematic collection and organization of examination questions pooled by an institution for the use of evaluators, academics and students in partial fulfillment of the requirements of the teaching-learning process. The question bank is an essential aspect of educational models and utility service designed to fulfill the predetermined purposes i.e. to enrich the instructional aspect and to judge the learners' instructional efforts (Biswas & Pradhan, 2002).

The valid, reliable and transparent questions depend on the purpose of examination, examination specifications, appropriate questions, and order of questions. The following are the purposes of effective questions and its collection.

- Pre-testing, development, review and revision.
- Preparing review exercises in textbooks
- Facilitate question paper setters and conduct formative/periodical assessment.
- Students' self-evaluation.

Scope of Question Bank

Question banks are available for questions posed in interviews, competitive examinations and classroom/semester examinations. Coaching and tuition centers effectively make use of past/previous examination

questions to prepare candidates for the forthcoming examination. Numerous coaching centers exist for preparing the students for examinations like GRE, TOEFL, NET, SSC, UPSC, TNPSC, CAT, etc. Moreover, numerous tuition centers train students to score maximum marks and secure minimum pass marks with help of question bank. Though some educationists argue that previous examination questions encourage rote learning, in April 2009 Central Information Commission (CIC) of India asked the major competitive examination conducting bodies like UPSC, SSC, UGC and CSIR to disclose the past examination questions (PQ), since that do not encourage rote learning and examiners need to improve themselves to challenge students (Garg, 2010). The question bank is prepared to support students and teachers for preparing lesson plan, reviewing class sessions, and preparing classroom tests (Zachariah, 1993).

Some students write wrong answers by misinterpreting the questions and some of them write similar answers for different cognitive level questions. It is important to analyze every aspect of teaching-learning process to make more effective and efficient, and if PQ can help the teaching-learning at only very minimum level, even that too should not be left away. Obviously, the practices of coaching and tuition centers show the positive use of PQ in our educational system. Hence, the exploration of various utility factors of PQ is important to understand and use its advantages in structured educational setting.

Users of Question Bank

PQ help students to know thrust areas of a subject, understand questions' depth, write appropriate answers, plan timings for each section of question paper, avoid examination fear and brainstorm among peer groups. It helps to find out the expected standard of the questions and plan for short and sharp answers (Race, 2003).

Teachers shall use the question bank to conduct mock examinations, conduct formative assessments, help low scoring students to concentrate on thrust areas, and guide high scoring students to write answers that are more appropriate.

Question setters can ask questions that are more critical, need not repeat questions, know other question setters' views and be specific to objectives of the course. The question bank will eliminate some of the defects in question setting. They are as follows (Dash, 2004).

- Persons who do not teach the subject for particular students set questions for the examinations.
- The question setters do not get adequate time for setting the questions.
- The questions are sometimes ambiguous and not properly framed or edited for clarity.
- Examination questions of various schools and colleges lack uniformity.

Types of Question Bank

The written classroom/semester examinations dominate in the present evaluation system of educational institutions. School, college, university and competitive examinations consist of objective and descriptive type questions. Some competitive examinations consists only objective type questions, but descriptive type questions share more marks in school, college and university examinations.

The following types of question banks are available for university/college written examination preparation.

- All possible questions
- Selective/most frequently asked questions
- All past examination questions

All Possible Questions

Individual or group of subject experts prepares this type of question bank. Considering the topics in a subject/syllabus, maximum possible questions are prepared. The questions are limited to the views of the expert team. This will help as a study guide for the students and do not project any thrust areas.

Selective/most Frequently asked Questions

Class teachers, tuition centers or publishing companies from PQ are involved in question preparation. This type usually consists of questions and answers, and helpful for the students who struggle to secure minimum pass marks. Also, helps students to score high marks by concentrating on certain topics alone. However, indirectly discourages students to consider all topics equally.

All Past Examination Questions

Examination centers (or) library of the institution/ organization prepare this kind of question bank. This consists of all subject-wise PQ from a particular year, and helps to know thrust areas, understand various types of questions and analyze answers to be written. It suits well for higher education as it supports students struggling to score minimum marks and those enthusiastic to score high without avoiding topics.

The question banks with answers will not encourage students in higher-order learning rather it may motivate for rote learning. Many students use question bank to see the repeated questions and unaware of its exact purpose. Hence, discussing the PQ in classroom by the teachers with different perspectives and explaining the expectation of the question would provide clear understanding among the students about the real purpose of question banks. The moderate and high-scoring students will try to score more marks by appropriately answering the questions. At the same time, this will help the low-scoring students to concentrate on important and essential topics to gain at least minimum knowledge.

Delivery Medium of Question Bank

The success of question bank depends on the accessibility features that will determine the effective use among target population. The following are the mediums to distribute '*All past examination questions*' question bank.

- Paper-based question bank
- Disk-based question bank
- Intranet based question bank
- Internet based question bank

Paper-based Question Bank

The question papers distributed in the examination hall are stacked as paper-based volumes in institution's library. The publication companies publish question bank books for competitive examinations and school examinations to cover huge population. Only few such books are available for universities/colleges particularly for engineering courses that have more students. The paper-based question bank is portable but very difficult for searching questions under a topic and new book is required to know further updates. Some publications may adhere to a type of ordering (i.e. units, topics, years, frequently asked, marks) that may not be convenient for students and teachers.

Disk-based Question Bank

The scanned copies of paper-based question bank distributed through CD/DVD are portable but require new disks to update further questions. Linking the image (scanned question papers) database to a software/ application requires that software installed in a computer before viewing the question bank, and every time the question bank viewed through the application. IGNOU distributes disk-based question bank with scanned images of question papers to its students.

Intranet-based Question Bank

This is developed by institutions and accessible within the entirely networked campus. Scanned images of question papers uploaded to a web server to facilitate the access through web browsers. Usually, the students and teachers access this facility with their username and password, but the access is restricted only within the institutional premises.

Internet-based Question Bank

This is similar to intranet-based question bank, but installed in an internet server allowing anyone to access from anywhere through internet connection. Since '*web*' is one of the services communicated through Internet, the PQ offered by this communication referred to as Web-based Past Examination Question Bank (WPQB). Private parties and institutions create this type of question bank. Many institution-based question banks ask for username and password to restrict outside students and teachers. Indian conditions that do not have sufficient campus network structure in many universities/colleges to install intranet based question bank is more suitable for WPQB

Private WPQBs do not cover all subjects and courses offered by numerous educational institutions. The services offered by private WPQBs are not well organized, does not contain easy search facilities, entire subjects are not covered, and not up-to-date.

Course teachers, libraries, educational technology/e-learning units, maintain the WPQBs developed by institutions. Some universities/colleges like Cork Institute of

Technology (Ireland), Indira Gandhi National Open University (India), Massey University (New Zealand), University of Kent (UK), University of St. Andrews (UK), University of Technology – Sydney (Australia) and University of Ulster (Ireland) has question banks comprising huge collection of questions ranging from 5 to 10 years, also the bank is up-to-date. However, many WPQBs, specifically Indian institutions' are not up-to-date and do not have large collection.

Web-based Question Bank In Indian Higher Education

India has 42 central universities, 259 State universities, 130 deemed universities, 65 private universities, and 49 institutes of national importance that includes IITs, NITs, IIMs and medical/statistical institutes. The State universities control more than 22,000 affiliated colleges among which 324 are autonomous colleges. Nearly 90% of undergraduate students, 66% of postgraduate students, 84% of faculty members are in the affiliated colleges (Government of Tamil Nadu, 2010; University Grants Commission, 2011). Hence, the higher education is mostly offered by affiliated colleges and the State universities affiliating them play an important role in conducting examinations to majority of the students.

The students scattered in various colleges attend end-semester/external examination (summative assessment) in their college with questions framed by the affiliating university. Many international and a few national level (India) higher educational institutions had developed WPQBs to combine the benefits of web technologies and question bank. Implementing a WPQB by State universities will support enormous student population studying in non-autonomous affiliated colleges. However, the importance of question bank for students and teachers in other institutions cannot be ignored.

The institutions spend money and time to prepare questions for the examination. After the examination is completed, the institutions keep a copy of a question paper in the library for use. The restriction in library timing and insufficient copies for enormous student strength are not encouraging the PQ use. With rapid improvements, the internet has reached to the maximum parts of our country. Making the question banks as an OER would help enormous student community in India and eliminate participation of private parties. Even if the internet has not reached some parts of our country, and that cannot be a reason for not creating question bank OER.

Presently, many WPQB archives created with least priority. The scanned question papers uploaded to the website do not contain customized search facilities. The digital archives require customized search facilities to locate the information easily and that will lead to effective use of questions by students and teachers. Moreover, this is a necessary element for affiliating universities in India to support enormous students and teachers.

Conclusion

The recommendation to establish a national question bank by Committee on Economic Education (CEE) - USA during 1970 and construction of computerized question bank in University of Kansas Medical Centre during early 1970s shows the importance given to question banks from earlier days (Bach, 1970). The usage of question banks is parallel to our examination system, especially written examinations system. Obviously, computerized question banks used and researched for the past four decades, and the researches continue to shape effective question banks and define its characteristics from time to time. Due to the immense growth of internet technologies, nowadays question banks occupied the web spaces too.

Question bank provides an opportunity to improve the evaluation, learning and answering skills among the students, questioning logics among the teachers, and examination patterns among curriculum designers. The question bank is not a learning material but supports as self-evaluation guide. In Indian higher education system, the students, teachers and question setters who are interested to access the past examination questions have no proper electronic sources. The influence of ICT in teaching-learning and educational administration has already witnessed by OER and web-based education. The web, which is considered to be a flexible electronic medium, is not yet used to deliver Past Examination Questions (PQ) effectively.

In this circumstance, blending anytime-anywhere accessibility feature of web technology with past examination question bank is considered as vital

requirement. The systematic and organized WPQB archive with semester-wise, unit-wise and keyword-based question search options will be much useful for teaching-learning community. These customized search facilities would allow accessing the resources effectively at anytime from anywhere. Eventually, the WPQB would result in understanding questions, achieving more marks, knowing thrust areas, improving questions and question patterns. Further, a scientific evaluation of WPQB and its utility is also essential.

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